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LIQUIDITY CREATION IN THE NINETEENTH CENTURY: THE ROLE OF THE CLEARING HOUSES[1]

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Abstract

This working paper reports the preliminary results of an effort to analyse under what conditions liquidity can be created in an historic context setting. Starting point is the notion made by Dang, Gorton, and Holmstrom (2012) that symmetric ignorance can create liquidity in money markets under certain circumstances. The authors take as an example the New York clearing house (NYCH) system from 1853 onwards. At times of panic, the intended suppression of bank-specific information by the NYCH avoided the identification of weak banks and thus safeguarded the reputation of all member banks. In addition to the threat of expulsion, one particular successful mechanism that united the banks in the U.S. was the issuance of the clearinghouse loan certificate, a de-facto liability of the clearinghouse. My hypothesis is that a number of critical factors have to be present for the clearing house mechanism to create liquidity. For comparison, I take the example of Switzerland where a clearing house was established in 1876. However, while the Swiss system exhibits many features similar to the NYCH (e.g. threat of expulsion, monitoring), it did not manage to achieve the necessary degree of risk-sharing among its member banks, and its failure became had become aparent by the time of the foundation of the Swiss central bank in 1907.

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INTRODUCTION

Understanding the nature of liquidity provisions is central for the regulation of the banking and financial system in general, and the topic has become particular topical after the financial crisis 2007-08, considered by many the worst crisis since the Great Depression of the 1930s. There is no universally accepted definition of liquidity; the protracted difficulties and delays of the Basel Committee's agreement on international liquidity rules are a recent case in point.

Generally speaking, the liquidity of an asset has to do with the ease at which it can be used to finance a random spending opportunity. If it can only be sold on short notice at a discount or not at all, then the asset is said to be illiquid. Liquidity can be quantified by using measures related to the ease at which assets can be bought and sold. For example, liquidity can be measured by transaction costs, such as trading delays and trading volume (Nosal, 2011).

Already the early deposit-bankers of the eighteenth century were aware that managing the risk of illiquidity was their first and main challenge. A run or crunch could easily mean the end of an otherwise successful business, even if assets exceeded liabilities. The main impact of the South Sea Bubble in 1720 on the financial markets had been a scramble for liquidity. By then, bankers knew that illiquidity was a greater risk than insolvency. As a result, cash reserves were general kept high, mostly above 20% and even up to 60% not considered unusual (Temin & Voth, 2006).

With the development of banking and financial markets, banks in the nineteenth century came under increasing pressure to establish efficient clearing and settlement arrangements. Clearing arrangements developed as banks began accepting claims on each other, and then evolved further as banks looked for ways to reduce both the direct costs of doing this, and the amount of the asset they needed to hold in order to effect settlement. First on a bilateral, then increasingly on a multi-lateral basis, these arrangements took the form of private certifying agencies, commercial bank payment houses or clearing facilities.

The earliest clearing houses were established in England (1775) and in Scotland (1771), followed by the United States (1853), Switzerland (1876), Japan (1879) and Canada (1887). In part driven by the greater practical convenience for the clerks and messengers, it was also for reasons of efficiency and safety for small and medium-sized banks to hold their reserves in form of deposits at the larger, centralized banks. Therefore it is often suggested that the bank or banks at the (geographical or trade) center would naturally take on some of the functions of the central bank. In due course, some of these clearing houses would perform more and more functions similar to present-day central banks (Goodhart, 1988). When the clearing institution also issued liabilities of superior standing (i.e. money that would retain its value even during a financial crisis), there were strong efficiencies with that same institution then acting also as a lender of last resort.

BACKGROUND

The recent financial crisis has been in part blamed on the complexity and opacity of financial instruments, leading to calls for more transparency – a state "when much is known by many". Transparency is generally thought of as socially beneficial, especially in the area of financial institutions (e.g. publication of accounts) and monetary policy decisions (e.g. central bank communications), to name a few examples.

Information asymmetry on the other hand creates an imbalance in transactions which can lead to a reduction in trade and complete market failure in the worst case. Well-known examples of this problem are adverse selection and moral hazard. Going back to Akerlof's famous market for second hand cars, asymmetric information decreases trade and destroys liquidity whereas symmetric information about payoffs creates liquidity (Akerlof, 1970). But in a case where private information becomes more relevant, symmetric information is easier to achieve through shared ignorance (i.e. opacity). Dang et al. (2012) show that symmetric ignorance creates liquidity in money markets. In order to be liquid, securities should be designed with regard to their impact on information acquisition (which is endogenous). The reasoning behind this is that agents can trade more easily when no one has an incentive to seek out information (the so-called "no-question-asked" property). In the setting of the model, efficient trade is inhibited by transparency. The authors show that the value of collateral is important in their theory because the debt which is backed by that collateral can become information-sensitive due to the shock to the collateral value. A "loss of confidence" also plays an important role.

Debt is designed to be "secret-less" (information insensitive); it is the best instrument for trading purposes as it provides liquidity. Debt in this context means it minimizes the incentive for agents to produce private information and that debt maintains the most value in the presence of aggregate shocks. Building on the earlier work of Bengt Holmström, Dang et al. (2012) propose that a crisis corresponds to a public shock that causes information *insensitive* debt to become information *sensitive*. This creates the rational fear of adverse selection - the idea that you might meet a better informed counterparty in the market who takes advantage of you. The crisis then results in a decline on trade as people and firms mark down the value of debt (G. Gorton, 2012).

The reasons for the occurrence of financial crises are complex. There is a large literature on financial crises, and three main theories have been advanced for the causes of bank runs. The first is a theory of self-fulfilling expectations or sun spot theories, as in Diamond and Dybvig (1983). Second, in a model of information-based runs by Jacklin and Bhattacharya (1988), it is characterized by two-sided asymmetric information: the bank cannot observe the true liquidity needs of the depositors while depositors are asymmetrically informed about bank asset quality. In a third theory, building on the work of Gary Gorton in 1985 and 1988, there is no coordination failure, but there also is asymmetric information. A shock can occur which is big enough to cause some banks to fail, but agents do not know which banks will fail. Risk adverse agents rationally respond by, for example, seeking to withdraw their money from all banks even though only a few are actually insolvent.

There is a loss of confidence in the sense that agents are no longer sure of banks' solvency. The disruption can be large, although the overwhelming majority of banks are still solvent. When debt is designed to preserve symmetric ignorance, liquidity is again being created. Examples of purposeful opacity can be found in today's money market mutual funds and the securitization process. An earlier example can be found in the functioning of the clearing houses in the nineteenth century, and it is to two of those that I turn my attention in this essay. My hypothesis is that a strong hierarchy (i.e. authority) and real risk sharing are necessary prerequisites for this mechanism to provide liquidity. A particular instructive example is the New York Clearing House (NYCH) which in times of financial stress issued physical certificates that were a liability of all the members of the clearing house. I will then contrast the NYCH with the Zurich Clearing House (ZCH) from 1876, an institution in Swiss history that has received little previous study, before I conclude.

COMMERCIAL BANK CLEARING HOUSES AS THE PROVIDER OF LIQUIDITY

STRUCTURE OF BANKING IN THE USA

In the nineteenth century, the banking periods in the United States were divided into a period of free banking laws (until 1864), followed by the National Banking Era. As the economy developed, the need for more inter-regional payments increased. In the US (like in England), drafts or cheques were preferred to bank notes at this time. In the US, legal restrictions prevented the development of branching. An additional factor affecting the structure of banking was the reserve bank requirements, whereby national banks were obliged to hold reserves in their region's "reserve city". They could use these reserves as correspondent banking balances, thereby employing their reserve bank as a clearing agent. The reserve banks in turn would typically clear and settle through local clearing house organizations. And banks in reserve cities in turn had to hold reserves with banks in major financial centers. As a result, New York (and, to a lesser extent, Chicago) sat at the top of the 'pyramid' for inter-regional payments (Norman, 2011).

Its basic structure was a fragmented system composed of about 4'000 of geographically isolated unit banks. The system was remarkably unstable. From 1873 to 1907 there were six major banking crises, three (1873, 1893, 1907) which saw suspension of convertibility of bank deposits. In three crises (1884, 1890 and 1896) suspension was avoided through collective action by the clearing houses which made markets in bank deposits and issued supplementary currency to add liquidity to the system (Calomiris & Haber, 2014). But due to the clearing house operations, actual performance meant that losses from all the note issues were negligible (Timberlake, 1984).

NEW YORK CLEARING HOUSE (NYCH)

The classic sources on the US clearing houses are Gibbons (1968), Cannon (1910) and Sprague (1910). More recent sources include Andrews (1942), Timberlake (1984), Gary Gorton (1984); G. Gorton (1985) and Mullineaux (1987) and Tallman and Moen (2012).

Reserve-city legislation and unit-banking had the effect (together with efficiencies to be gained in the inter-regional clearing and settlement arrangements) that the banking system held its reserves with the members of the New York Clearinghouse Association. Before 1853, prior to the establishment of the clearing house, each bank would send a clerk or messenger to carry checks to each of the other banks and present them for payment. In a city like New York, which contained at least 52 banks at the time, this "*created a veritable plague of bank messengers descending daily upon each institution*" (Andrews, 1942). It was not long before the messengers were meeting by regular appointment in a public house. By 1889, 51 US cities had clearing houses. They performed a large variety of functions, including requirement of weekly statements, records of their daily transactions at the clearing house, requirement of information to be made public, requirement of reserves, and examinations of accounts and discipline through threat of suspension of privileges (G. Gorton, 2012). The clearing house in its role as supervisor would act as a substitute for the price system; hierarchy (i.e. authority) would replace the market. In the words of O.M.W. Sprague, the clearing house in NY showed "determination and strength" on several occasions (Sprague, 1910).

To prevent free riding on collective protection clearing house members had to pass and submit to enforced regulatory requirements. There are strong reasons in favor of quality measurement by the banks themselves; the best banks would favor such monitoring mechanism. The clearing house was well positioned to provide such services (G. Gorton & Mullineaux, 1987). Most importantly, from 1856 NYCH members were required to maintain a high level of cash assets (25 % of their deposits) and this had the additional effect of lowered both the credit risk and the liquidity risk of the banking system (Charles W. Calomiris & Haber, 2014).However, high reserve requirements made membership unattractive to some banks, and other banks were also too far away to be members. So, in summary, rural banks, small banks and banks in smaller cities did not have formal clearing house arrangements (G. Gorton & Huang, 2006). The feature of the large city banks catering to their own interest has led to criticism of the arrangement (Berger, 2010).

COLLECTIVE ACTION DURING PANICS

The clearing houses performed dual roles of managing the interbank transfers of notes and deposits during normal times and establishing rules for collective action during panics. Clearing house members made markets in each other's liabilities to limit each other's withdrawal risks during panics. A sudden shift in the perceived riskiness of demand deposits and the ensuing information asymmetry could leave all banks vulnerable and increased the threat of contagion.

So in several extreme panics, the members of the NYCH also issued clearing house certificates which were collective liabilities for which they were mutually liable. This originated during the panic of 1857 and was used in every subsequent panic through 1914.

Such loan certificates were issued against the assets of needy member banks. These were backed by member banks' portfolios, submitted as collateral. The clearing house certificates were issued amounting to a percentage of the value of the collateral, typically for three months, and the bank agreed to pay (a maximum of) 6 % interest. The certificates could then be used to replace currency in settlement. During a panic, there was a real risk that a weak member would fail, and that its collateral would prove insufficient. This risk was spread among the members, the loan certificates were the joint liability of all member banks. The loss was borne in proportion to each member's capital relative to the total capital of all members (Gary Gorton, 1984). The pooling of reserves provision was not popular. The more conservatively managed banks felt that pooling denied them the rewards for their caution (Timberlake, 1984).

Clearing house loan certificates were used for the first time in 1863 and 1864, during a period of strain for the banks, and more importantly, during the crisis of 1873:

"*The loan certificate provided a means of payment other than cash, and what was more important, it took away the temptation from any single bank to seek to strengthen itself at the expense of its fellows, and rendered each bank willing to assist the community with loans to the extent of its power […] by which the stronger banks placed themselves under the unequal burden and equalized the pressure by gathering in their resources and placing them at the disposal of the weaker, who were thus furnished with means to meet the demands of their depositors and to save themselves from public exposure and their dealers in city and country from ruin*. "

(Sprague, 1910).

When panic occurred, the structure of the banking industry was radically altered: the clearing house collapsed into a firm-like organization, uniting the member banks in a hierarchical structure topped by the Clearing House Committee. The signal was suspension of the publication of individual bank balance sheet information. Instead, the aggregate of all members was published; this avoided identifying weak banks to the public. So there was a sudden shift from transparent, individual information to opaque aggregate information in order to preserve liquidity. The liabilities of the NYCH, mutualized liabilities of the member banks, had become a form of superior or high-powered money. In other words, clearing house loan certificates were trying to engineer "secret-proof" bank debt (G. Gorton, 2012).

In the Panic of 1873, any runs on particular banks in the clearing house association ceased after the issuance of the certificates, but further pressure was experienced from saving banks (who carried little or no cash reserves) and from out-of-town banks (Sprague, 1910). Continuing liquidity pressures would therefore ultimately fall on the New York banks at the center of the banking system. However, the emergency paper was (until the under the passing Aldrich-

Vreeland Act in 1908) technically illegal (Norman, 2011) and there were other important shortcomings such as their stringent membership criteria and in their inability (or unwillingness) to supply liquidity to certain new kinds of financial institutions such as trusts. This was important in 1907 when runs on two of the city's largest trust companies, the Trust Company of America and the Knickerbocker Trust occurred. Not a member of the NYCH, Knickerbocker Trust nevertheless approached the clearing house for a loan but was turned down and the trust subsequently collapsed. Some observers say that the Panic of 1907 was one of the most severe because the trusts were not integrated in the clearing house system (Tallman & Moen, 2012).

STRUCTURE OF BANKING IN SWITZERLAND

The classic sources on Swiss banking are Jöhr (1915) and Ritzmann (1973), with a more recent contribution by Weber (1990). Banking in nineteenth century Switzerland was relatively stable. There was a monetary squeeze in during the French-Prussian War of 1870 and further concerns about wars in 1886/87 which had the businesses and banks worried but there was no full panic. In fact, before 1907 (the end of the free banking period) only two bank runs occurred, Générale de Suisse (April 1859) and Eidgenössische Bank (October 1869). These were based on bad information circulating, and bore no resemblance to the occurrence of sun spot runs like in (Diamond & Dybvig, 1983). In total, the number of banks at the end of the nineteenth century stood at about 400 banks, most of which were very small (Nedwed, 1992). There were several banking centers in Switzerland, the most important in Basel, Zurich, Berne, St. Gallen and Geneva.

Switzerland at the time did not have a very advanced banking system, comparatively speaking, having only moved to a unified coin system in 1850. The steady increase in the number of banks that issued their own bank notes (36 at their peak) suggests that it was easy to get a charter to issue notes, and that at least until the introduction of the first federal Bank Note Law in 1881, they were free from government interference (Weber, 1990). Throughout the century, bank notes were the popular medium for larger and business transactions in the cities, the checking or deposit system was (in comparison to the USA or England) underdeveloped. Bank notes (i.e. small denomination discount bonds) were payable in specie on demand at issuing bank but they did not exchange at par outside the bank but at a discount against specie. By the end of the nineteenth century, the bank notes lost more and more of their localness and as they became more homogeneous in appearance, they became a widely accepted means of payment, trusted by the public. Their circulation and acceptance was further enhanced by the formation of a clearing house at the Bank of Zurich in 1876.

THE ZURICH CLEARING HOUSE (ZCH)

In the beginning years when the need for more efficient settlement first emerged, bilateral contracts between the Swiss banks developed as early as 1844. This was driven by convenience where mutually beneficial, characterizing the prevalence of trade flows for example between Zurich and St. Gallen. At first it was a temporary help with ready cash in times where one bank possessed liquid funds, while the other was suffering lack of it (Bleuler, 1913).

In 1876, twenty-one note-issuing banks banks (i.e. about three quarters of all note-emitting banks) agreed to accept one another's notes at par and installed a clearing center at the Bank in Zurich. The city of Zurich at the time was the main trading place ("Handelsplatz") in the Northern (more industrialized) part of Switzerland. During the following years, another three banks joined, leaving 15 mostly smaller banks outside the agreement. Criteria for membership were the location in a "Handelsplatz" and the independence of the bank from their cantonal government. Banks that were too local in character and/or could not offer sufficient or eligible collateral were excluded.

The goal of the member banks of the clearing house was to reduce the costly transfer of specie from bank to bank, and to make for a more efficient and faster settlement process in a country that was because of its geographical landscape difficult to traverse. In the case of the ZCH, each participating bank had to make available its weekly cash balances ("Situationsbericht") and monthly balance sheets to all other participating banks, enabling the banks to reliably evaluate one another's standing at low cost (Fink, 2014). "*In the mutual vigilance among the banks themselves and the audience would gain in safety and trust*." (Bleuler, 1913)

It is important to note that publication of accounts was not an established routine in Switzerland before 1881, and the regular publication of bank balance sheets was opposed by most banks. Director Früh from the Bank in Zurich is quoted as saying "that to those people who are particularly interested in it and do not assume any copy thereof or make any use to the public, the accounts may be communicated on demand." (Mangold, 1909) It seems that only the Bank in Basel published regularly each Monday its balance sheet from the previous Saturday in the later years.

However, the ZCH was not as successful as the NYCH. Already two years later, in 1878, the banks that participated went back to bilateral agreements because the notes kept flowing back to quickly. In 1882, nineteen banks came together for a new clearing agreement to succeed the agreement of 1876 and six additional banks joined later, but the volume of notes flowing through the clearinghouse was not large to begin with and declined further over the 1880s. A third agreement in 1901 did also not turn the country-wide clearing house into a significant organization (Fink, 2014). Cost conscience seems one concern. It seems that in later years, the issuing banks through their conventions and concordats have always sought to reduce to a minimum these shipments of notes and specie since it was generally believed that their self-restraint would help them to reduce their costs. There also was fear of unfair play. The decision

not to send back foreign notes back for redemption had been reached mainly because it was feared that the issuing banks in question would not fail to include in their shipments of specie those of your own notes which they just happen to have in their possession. (Neldner, 1998).

It seems that overall, the ZCH ran into two particular problems. One is similar to the occurrence of "note dueling", a phenomenon of the free banking period. One bank would collect as many as possible notes of the competitor, and insisting on redeeming them all in for specie, leaving the competing bank at a loss and unable to pay out (Jöhr, 1915). It seems from the historical evidence that the Bank in Zurich was similarly abused by its member banks most of which demanded payment as soon as possible, „in kürzester Zeit in baar zurückverlangt" (Bleuler, 1913). The other issue was one of cost and economy. Member banks were required to place reserve specie as security at the ZCH. But there was no efficiency gain to be had – for the banks it was irrelevant whether the reserve was stored in the central vault or in their own (this was at sunk cost as the vault was already built). In addition, settling through the ZCH was more expensive for both settlement parties as they occurred the freight cost twice. The direct (bilateral) exchange of notes was more cost effective. Other reasons for increasing unpopularity after 1875 were new laws which brought about a re-organisation of the clearing house and introduction of further fees.

> "*However, it had still strong to reckon with the human habit that new does not accept as quickly as one would like it often, and also lacked better communication and transportation."* (Mangold, 1909)

THE CLUB NOTE ("VEREINSNOTE")

There was one interesting feature of the Swiss monetary arrangements that contributed to the liquidity of the market while impacting on the way information was transmitted. As the bank notes lost more and more of their localness and became more homogeneous in appearance, they increased in circulation and acceptance. A group of major banks started in 1867 to standardize the outward appearance of their paper issues by creating the so-called "club note" (Bleuler, 1913), and in 1881, the new Federal Banking Law made compulsory what had already begun to become common practice. The law called for a uniform design of all bank notes of the same denomination, and each issuing bank was henceforward liable to accept foreign notes at par and (within three days' notice) to mediate their redemption, provided that the banks which had issued them were willing and able to settle any resulting negative clearing balances in specie promptly.

However, since the various notes still carried the name and the signatures of their respective issuers, and since their redemption still was not collectively guaranteed, they were neither indistinguishable nor perfect substitutes on the supply side. The general public, nevertheless, had decided to regard the different types of bank notes as perfect substitutes on the demand side (Klein, 1974). They became ignorant as to which bank was the issuer; they did not care if the

issuer was a strong or a weak bank. Thus bank-specific information became irrelevant. Hence, notes were not presented for redemption to those banks who had issued them, but for the most part to the three issuers with the greatest market shares, the Banque du Commerce de Genève, the Bank in Basel and the Zurcher Kantonalbank, all members of the ZCH (Neldner, 2003).

CONCLUSION

In this short paper two examples from financial history have been studied to show under what conditions liquidity can be created by opacity. In the case of the NYCH dating from 1853, the intended suppression of bank-specific information at times of crises avoided the identification of weak banks and thus successfully safeguarded the reputation of all member banks during several panics. Bank specific information was no longer relevant because aggregate information was appropriate information. In the case of the ZCH dating from 1876, the co-operative arrangement lead to greater monitoring among member banks, however, the incentives to offer co-insurance for its members were not strong enough and competition among its member banks prevailed.

While the US in the nineteenth century suffered several severe banking panics, the environment in Switzerland was much more stable. This might in part explain the lack of need for extra liquidity, or superior money. However, Switzerland's note supply was generally found to be insufficient (see, for example Gygax (1901)), particularly at the seasonal settlement dates in the spring and fall, and at the time of the French-Prussian War of 1870. The liquidity crunch was relieved by the federal decision to allow substitute money such as foreign currency as legal tender in the years after 1870 so there was no need for the banks to seek their own solution.

It also seems from the literature that the bond between the large banks in the National Banking Era in the USA was much stronger and uniting than the strained relationship between the banks in nineteenth century Switzerland. In a way, the Swiss system bore more resemblance to the Suffolk bank system which was also unpopular with its own participating banks (Mullineaux, 1987). The solution which the Boston banks agreed upon in the mid-1820s was to appoint a single agent for clearing and settling notes redeemed in Boston – the Suffolk Bank. This bank cleared on a multilateral net basis and settled banks' positions in deposits held with it. Participating banks held both a clearing balance, and a larger balance which appears to have provided the Suffolk Bank with security against any risks incurred in the clearing process, as well as with income. This is similar to the set-up at the Bank in Zurich.

The economies of scale in concentrating liquidity in a few centers developed a deeper market for bank claims accentuated this tendency towards centralization in the USA. Switzerland on the other hand, geographically a much smaller country, was still relatively decentralized, partly due to its political structure and strong cantonal influence at the time. This also meant that the membership of the ZCH was geographically more diverse. In New York, certainly by 1907, the market (and liquidity) was controlled by the big six nationally chartered banks of the city. One

criticism brought forward was that their membership criteria were too stringent and designed to reflect only the interest of the member banks and not the public (Berger, 2010). The six banks (out of the 52 banks) in New York City accounted for over 70 % of the clearing house loan certificates issued by member banks in 1907 (Tallman & Moen, 2012). In Switzerland, the turnover of the ZCH was small as a percentage of all note issuance but the membership was 50% of all note-emitting banks (by numbers).

It has been argued by G. Gorton (1985) that the rise of demand deposits relative to bank notes necessitated a larger role for the clearing house because the demand deposit contract differed from the bank note contract. Bank notes (small denomination discount bonds) payable in specie on demand at issuing bank did not exchange at par outside the bank but at a discount against specie. The bank note market revealed information about specific issuing banks, making a secondary market possible. A demand deposit is a double claim since it is a claim on a specific agent's account at a specific bank and there is no secondary market. The market was internalized by the banking industry in the form of the clearing house but prices did not reveal bank specific information. This necessitated a non-price system to monitor bank performance (i.e. the clearing house).

My hypothesis is that a number of critical factors have to be present for the clearing house mechanism to be successful (i.e. in order to create liquidity). They are listed in the appendix on the next page. In addition to the threat of expulsion, it seems that the most successful mechanism that united the banks in the New York City was the issuance of the clearinghouse loan certificate, a de-facto liability of the clearinghouse. A strong leadership structure was crucial for this. In conclusion, formalized risk sharing appears to be a necessary condition; monitoring and supervision was not sufficient.

The practice of banks coming together in times of liquidity pressure to issue joint liabilities was not unique to New York. It is assumed that New York pioneered it, but other clearing houses and groups of banks adopted it as well. It is not entirely clear why the status of claims on the New York Clearinghouse rose to a status so clearly above claims on other associations, or why their arrangement was so successful, despite being illegal. However, in the end, the wish for an official currency prevailed, and many saw the Federal Reserve System that followed as an evolutionary development of the clearing house. The observation that the development of central banks seems to be the natural successors of the historic clearing houses has been made for other countries as well. An area of future research could be the success of the clearing house mechanism in the light of its liquidity creation.

APPENDIX

Criteria and Comparison of the Clearing Houses

	NYCH	ZCH
Founded	1853	1876
Basis	Constitution	Contract
Purpose	Bank deposit clearance	Bank note clearance
Geographical reach	New York area	Switzerland
Bank supervision	State Authorities or Comptroller of the Currency	Limited (cantonal)
Restricted admission	yes	yes
Admission test	yes	informal
Admission fee	yes	n/a
Cash ratio	25%	40%
Reserves	Specie (gold)	Specie (gold, silver)
Audits	yes	yes
Reporting (internal)	daily during panic	weekly report, monthly balance, full accounts at year end
Reporting (external)	Yes (banks: periodical to Comptroller of the Currency, clearing house: weekly)	Public accounts for the clearing house after 1903
Fines	n/a	yes
Expulsion	Frequent	n/a
Resignation	?	3 months notice
Issuance of liabilities	Yes (Paper Certificates)	No
Losses	1.8%	n/a
Disputes	Solved through Executive Committee	"Schiedsgericht"
In operation until	1913	1907

Sources: Gygax (1901), Sprague (1910) Bleuler (1913), (Gary Gorton, 1984); Tallman and Moen (2012).

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